MARSHALL STAR

Marshall Space Flight Center **Feb. 3, 2000**

"We bring people to space — We bring space to people"

Courtesy photo

Marshall's PEST launches aboard Air Force satellite

An Air Force satellite launched into orbit Jan. 26 carrying Marshall's Plasma Experiment Satellite Test (PEST). The test to study ions in space was developed at Marshall by chief scientist Nobie Stone of the Space Science Department; engineer Fred Berry of the Science Systems Department; and research scientist Ken Wright Jr. of the University of Alabama in Huntsville. The two-month test will measure the mass of ions and identify oxygen, nitrogen and other gases in the upper atmosphere.

Goldin budget briefing Monday

Center director to follow with all-hands meeting

A briefing on NASA's fiscal year 2001 budget request is scheduled for 1:30 p.m. CST Monday. NASA Administrator Dan Goldin and NASA Comptroller Malcolm Peterson will participate in the briefing, to be held at NASA Headquarters in Washington, D.C., and broadcast on Marshall Centerwide television.

Marshall employees and contractors are encouraged to view the briefing in Morris Auditorium. Following the briefing, Marshall Center Director Art Stephenson will hold an all-hands meeting to brief attendees on Marshall's funding allocation and the outlook for the Center's major programs.

Advanced Space Transportation

Second magnetic levitation track installed at Marshall

by Deana Nunley

A second magnetic levitation track is up and running at Marshall. The experimental track, designed and built by Foster-Miller Inc. of Waltham, Mass., was installed inside a high-bay facility at the Marshall Center this month.

Marshall's Advanced Space Transportation Program is developing magnetic levitation — or maglev — technologies that could give a space launch vehicle a "running start" to break free from Earth's gravity.

A maglev launch system would use magnetic fields to levitate and accelerate a vehicle along a track at speeds up to 600 mph. The vehicle would shift to rocket engines for launch to orbit.

Maglev systems could dramatically reduce the cost of getting to space because they're powered by electricity, an inexpensive energy source that stays on the ground — unlike rocket fuel that adds weight and cost to a launch vehicle.

The Foster-Miller experimental track accelerates a carrier to 57 mph at its peak — traveling 22 feet in 1/4 second, the equivalent of 10 times the acceleration of gravity.

The tabletop track is 44 feet long, with 22 feet of powered acceleration and 22 feet of passive braking. A 10-pound carrier with permanent magnets on its sides swiftly glides by copper coils, producing a levitation force.

The track uses a linear synchronous motor, which means the track is synchronized to turn the coils on just before the carrier comes in contact with them, and off once the carrier passes. Sensors are positioned on the side of the track to determine the carrier's position so the appropriate drive coils can be energized.

Engineers are conducting tests on the indoor track and a 50-foot outdoor maglev track installed at Marshall last September by NASA and industry partner PRT Advanced Maglev Systems Inc. of Park Forest, Ill.

The testing is expected to help engineers better understand maglev vehicle dynamics, the interface between a carrier and its launch vehicle and how to separate the vehicle from the carrier for launch. Future work on large systems will be led by Kennedy Space Center in Florida.

The writer, a contractor employed by ASRI, supports the Media Relations Department.

"Job Safety is No. 1"
— Safety slogan submitted by
James Bailey, PS50

Leadership Forum

Panelists for the Leadership Forum that kicked off Marshall's Black History Month events were, from left: Fred Gregory, NASA associate administrator for Safety and Mission Assurance; Jim Reynolds of Huntsville's Corps of Engineers; James Jennings, deputy director of Kennedy Space Center; Dr. Helen McAlpine, retired assistant superintendent of Huntsville City Schools; Dr. Delbert Baker, president of Oakwood College; Huntsville Mayor Loretta Spencer; and John Stallworth, owner of Madison Research. Also pictured from right are Charles Scales, director of Marshall's Equal Opportunity Office, and Dawn Cross, chairwoman of Marshall's Black History Month Committee.

Photo by Doug Stoffer, NASA/Marshall Space Flight Center

President issues African-American History Month proclamation

Each year during National African-American History Month, as we explore the history and culture of African-Americans, we discover anew a treasure of stories about the triumph of the human spirit, inspiring accounts of everyday people rising above the indignities imposed by prejudice. These stories are not only an important part of African-American history, but an essential part of American history.

We are awakened to such stories through the power, beauty and unflinching witness of poets and writers like Maya Angelou, Gwendolyn Brooks, Paul Laurence Dunbar, Langston Hughes, James Weldon Johnson, Toni Morrison and Alice Walker. We find them in the lives and voices of Frederick Douglass, Sojourner Truth, Booker T. Washington and others who, rising above slavery, brutality and bigotry, became great American champions of liberty, equality and dignity. We see them written in the achievements of civil rights leaders like Daisy Bates, James Farmer, John Lewis, Martin Luther King, Jr., Thurgood Marshall, Mary Church Terrell, Roy Wilkins and Whitney Young.

Forty years ago this month, a new chapter in African-American history was written. On Feb. 1, 1960, four courageous young men — freshmen at North Carolina Agricultural and Technical College in Greensboro — sat down at a segregated lunch counter in a local store and politely refused to leave until they were served. Their nonviolent action challenged a barrier that, symbolically and practically, had separated black and white Americans for decades and denied equal treatment to African-American citizens. The extraordinary bravery and determination of Ezell Blair Jr., Franklin McCain, Joseph McNeil and David Richmond galvanized young men and women of conscience across America, setting in motion a series of student sit-ins in more than 50 cities and nine states. Subjecting themselves to verbal abuse, physical violence and unjust arrest, thousands of black and white students peacefully demonstrated to end segregation in restaurants, theaters, concert halls and public transportation and called for equality in housing, health care and education. Their story of conscience and conviction and their ultimate triumph continue to inspire us today.

The theme of this year's African-American History Month is "Heritage and Horizons: The African American Legacy and the Challenges of the 21st Century." It is a reminder that the new century on which we have just embarked offers us a unique opportunity to write our own chapter in the history of African-Americans and of our nation. We can use this time of extraordinary prosperity and peace to widen the circle of opportunity in America, to recognize that our society's rich diversity is one of our greatest strengths, and to unite around the fundamental values that we all share as Americans. We can teach our children that America's story has been written by men and women of every race and creed and ethnic background. And we can ensure that our laws, our actions, and our words honor the rights and dignity of every human being.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by virtue of the authority vested in me by the Constitution and laws of the United States, do hereby proclaim February 2000 as National African-American History Month. I call upon public officials, educators, librarians and all the people of the United States to observe this month with appropriate ceremonies, activities and programs that raise awareness and appreciation of African-American history.

IN WITNESS WHEREOF, I have hereunto set my hand this thirty-first day of January, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

— William J. Clinton

Black History Month

'Lunch and learn' Feb. 8 features Missouri Torrence

Black History Month activities continue Feb. 8 with a "lunch and learn" program at 11:30 a.m. in conference room 5002 of Bldg. 4203. It will feature Missouri Torrence, author of "Dulcina DeBerry: Door Opener," a book about the first African-American library in Madison County.

Missouri Torrence

In telling this story, Torrence provides a portrayal of the African-American community in the area and its relationship with the larger community. Following publication of the book, the Huntsville Public Library restored the defunct name of DeBerry Library to a branch in the Richard Showers Recreation Facility on Blue Springs Road. It is now the Dulcina DeBerry Branch.

Torrence, a native of Madison County, is an educator, church worker and community leader. For more than 39 years, she worked as a teacher and administrator in a wide range of positions from the elementary grades through freshman English at Alabama A&M University.

Other events planned for Black History Month include a science fair from 9 a.m.-4 p.m. Feb. 17 in the Bldg. 4203 cafeteria; the Jazz Cafe from 11:30 a.m.-12:30 p.m. on Feb. 18 in the cafeteria of Bldg. 4203; and the closing ceremonies from 9-10 a.m. Feb. 23 in Morris Auditorium.

Key Personnel Announcements

Parker V. Counts has been reassigned as manager of the Reusable Solid Rocket Booster Project in the Space Shuttle Projects Office.

Counts has held a variety of increasingly responsible positions since joining Marshall in 1963. In 1991, he was reassigned to NASA Headquarters as manager of Operations Integration in the Office of Space Flight of the Space Shuttle Program. He later returned to Marshall as manager of External Tank in the Space Shuttle Projects Office.

Michael U. Rudolphi has been reassigned as manager of Reusable Solid Rocket Motor in the Space Shuttle Projects Office. He previously served as manager of the Solid Rocket Booster Project in the Space Shuttle Projects Office.

Rudolphi joined Marshall in l988 as facilities manager on the Advanced Solid Rocket Motor Project in Iuka, Miss. In 1995, he became manager of the Solid Rocket Booster Project in the Marshall Resident Office at Kennedy Space Center, Fla. He later returned to Marshall as chief engineer of the Solid Rocket Booster Project in the Science and Engineering Directorate.

Jerry W. Smelser has been reassigned as manager of the External Tank Project in the Space Shuttle Projects Office. He had served as manager of the Technology Evaluation Department in the Space Transportation Directorate.

Smelser joined Marshall when the Center was established in 1960. He brings to this new assignment extensive and specialized experience in space transportation systems development and project management.

Showing kindness while driving may help prevent 'road rage'

by Johnny Mason

Violent aggressive driving, or "road rage," is a growing public concern.

David Willis, president of the AAA Foundation for Traffic Safety, said a recent study identified 10,037 road rage incidents nationwide between Jan. 1, 1990, and Aug. 31, 1996.

At least 218 men, women and children were killed as a result of these violent driving encounters; 12,610 were injured. Incidents of road rage have grown steadily at a compound annual rate of almost 7 percent, Willis said.

Today it is common to hear of someone becoming enraged while driving. Many people stressed about jobs, family problems, road construction or number of vehicles on the highways vent their anger while driving.

Drivers who are sometimes inattentive when playing their car stereos loud, talking on cellular phones, checking their appearance or just in a hurry can create an environment that may set off other drivers. Allow yourself extra time for travel to prevent delays from construction and traffic jams. Listen to local TV or radio stations for construction or travel problems, or take an alternate route.

Willis said drivers should understand that driving is a privilege, not a right. This privilege can be taken away if we do not drive in a safe and responsible manner.

The AAA Foundation study suggested ways for people to change their own behavior to avoid setting off other drivers: Don't cut people off, don't tailgate, don't hog the left lane, and don't make obscene gestures.

If you encounter an enraged driver, a potentially dangerous situation can be prevented simply by not making eye contact with the driver. And show kindness when you're behind the wheel.

For additional information:

- Visit National Highway Traffic Safety Administration at: http://www.nhtsa.dot.gov/

Or the AAA Foundation for Traffic Safety at: http://www.aaafts.org/index.htm

- A film on driving safely is available from the Safety Film Library in Bldg. 4207. For a list of safety videos, visit Marshall's Safety Web page at: http://msfcsma3.msfc.nasa.gov/
- Safe driving tips from Consumer Reports are available online at: http://www.consumerreports.org/Special/Samples/Reports/9806driv.htm

The writer, a contractor employed by Hernandez Engineering Inc., supports the Safety and Mission Assurance Office.

Groundhog Job Shadowing Day 2000

Local students to visit Marshall employees

The Marshall Center is participating in Groundhog Job Shadowing Day 2000 by inviting 10 area high school students to watch Marshall employees at work.

The Huntsville/Madison County Chamber of Commerce and the Marshall Education Programs Department are working together in this program, designed to assure a skilled and available work force for the future. Students will visit Marshall on selected Wednesdays in February.

Through this experience, students will begin to identify specific career interests; observe the daily routine of today's workers; learn about the academic, technical and personal skills required to do a particular job; realize that different jobs are characterized by different work cultures and working environments; understand the connection between school and work; and be able to shape their goals for the future.

On Wednesday, Michael McLean, a contracting officer in the Science and Center Operations Support Department, hosted the first student. Other Marshall employees who will have "shadows" include:

Feb. 9:

• University Relations coordinator Frank Brannon, a contractor with Ai Signal Research Inc. who supports the Education Programs Department;
• Education specialist Pamala Heard, an employee under the Intergovernmental Personnel Act who supports the Education Programs Department;
• Materials engineer NanceJo Ogozalek in the Materials, Processes and Manufacturing Department; and
• Electronics engineer Clint Patrick, in the Avionics Department.

Feb. 16:

• Ground Support Equipment & Mechanisms Design Group lead Nancy Gibson, in the Structures, Mechanics and Thermal Department; and
• Flight Activity Planning engineer Tony Kim, in the Payload Operations and Integration Department

Feb. 23:

• Materials engineer James Coston, in the Materials, Processes and Manufacturing Department;
• Vehicle Subsystem Engineering Group lead Robert Champion, in the Vehicles and Systems Development Department; and
• Contracting officer Mike Fowler, in the Space Flight Projects Support Department.

Meetings set to discuss Superfund cleanup sites

Two meetings to discuss proposed Superfund site cleanup methods and related activities are planned this month.

A "lunch and learn" session will be held from 11-11:30 a.m. Feb. 8 in Morris Auditorium for Marshall employees, and a public meeting will be held from 6:30-8:30 p.m. Feb.17 at the Huntsville-Madison County Public Library at 915 Monroe St. in Huntsville.

The Marshall Center has proposed final action on 35 Superfund sites on the Center. Marshall's Environmental Office is working to clean up five of these sites in the East and West Test Areas, and at the Bldg. 4760 plating shop.

The deluge pond for the Advanced Engine Test Facility in the West Test Area has a thick plastic liner to contain metals and sediment contaminated with volatile chemicals.

The retention pond in the East Test Area also will be drained and a plastic liner installed to contain polychlorinated biphenyls (PCB). The fish in the East Test Area pond will be harvested to prevent PCBs from traveling up the food chain. PCB-contaminated sediment from a drainage ditch in the East Test Area was shoveled into drums for disposal.

Soils contaminated with volatile chemicals around Bldg. 4760 will be cleaned using soil vapor extraction — a process that uses a vacuum to pull vaporized volatile chemicals from fissures in the ground. To enhance the effectiveness of the process, air will be forced into the ground through wells to increase the number and length of fissures in the ground. After the ground is fractured, hot air will be injected through the wells to vaporize the volatile chemicals which can then be vacuumed.

The other 30 sites have been proposed for land use control, reserving the sites' use for industrial purposes only.

Stewart joins Education Programs Department

Karen Stewart has joined Marshall's Education Programs Department as part of the Intergovernmental Mobility Program.

Stewart, from the Madison County School system, has taught general biology, human anatomy and physiology and environmental science at Buckhorn High School for the last 11 years. She will be working with staff at the U.S. Space & Rocket Center in the development of curriculum utilizing Spacelab.

Spacelab is a reusable research laboratory for space.

Karen Stewart

Marshall scientist improves solar flare predictions

by George Hayward

Solar flares can happen at any time and are difficult to predict, but a solar physicist at Marshall has devised a better way to predict their frequency.

Every 11 years, the Sun spawns a flurry of sunspots, solar flares and other explosive events — the result of cyclical shifts in the gaseous orb's magnetic field. Such events can happen any time in the Sun's 11-year cycle, which is akin to Earth's year. But at the peak of the cycle, called "solar maximum" or "solar max," they're particularly plentiful.

Using a new forecasting technique, Dr. David Hathaway, leader of the Marshall Center's solar physics group, predicts "this cycle looks like it's going to be bigger than average, but probably similar to the last two cycles or perhaps slightly smaller," he said.

Scientists have been watching and charting the Sun's explosive activity since Galileo invented the telescope in the early 1600s. But while they've been able to follow the 11-year cycle, they've had little success predicting a cycle's month-to-month intensity in terms of the number of sunspots. The sunspots are the precursors to solar flares and other events.

"If you look at it from day to day, the Sun's activity fluctuates wildly over the course of a month," Hathaway said. "If you look at the monthly values, they fluctuate wildly, as well."

Prior to the Space Age, the most visible effect of solar activity was the showy aurora borealis, or Northern Lights, Hathaway said. "Because we're more dependent on technology now — in particular as we venture into space — it's more important for us to understand solar activity and predict it reliably so people can take the necessary precautions."

For instance, during the solar max of 1989, such a "solar power surge" damaged transformers of the Hydro-Quebec power system, leaving 6 million people in Canada and the Northeast United States powerless for more than nine hours.

Scientists have worked for decades with dozens of prediction techniques, focusing on two methods to forecast sunspots: long-term predictions for the size of the next cycle and month-to-month forecasts within a given cycle. At best, their results have been mediocre. The long-term predictions, called precursor methods, only forecast a cycle's general intensity. And the month-to-month forecasts were accurate only in the middle of a cycle.

Hathaway analyzed scores of techniques, combining the best of both methods. He took two precursor methods that generally scored much better than others and usually had offsetting errors, and combined them into a weighted value. These values were then used with a bell curve of monthly sunspot activity. When he aligned the low points of the curve with low points of the current solar activity cycle, he found the results were better than expected. "Three out of the last four months have been right on what we have predicted," he said.

Hathaway predicts solar max 2000 will reach its peak in mid to late 2000, but high levels of activity will continue well into 2001. "The sunspot maximum is usually a broad peak," he said. "There is a two- or three-year period when activity is quite high." Still, he said, solar max 2000 will be "no record-breaker."

The writer, a contractor employed by ASRI, supports the Media Relations Department.

ERC hosts Civil Air Patrol

Marshall's Educator Resource Center (ERC) recently hosted members of the Southeast Region of the Civil Air Patrol from Alabama, Georgia, Florida, Mississippi, Tennessee and Louisiana. The group heard presentations on the history of rocketry by Marshall historian Bob Jaques, an Ai Signal Research Inc. contractor supporting the Internal Relations and Communications Department, and Robert Champion, an engineer in the Space Transportation Directorate.

Photo by Terry Leibold, NASA/Marshall Space Flight Center

Software to be released externally must conform to NASA policy

Software is a valuable technology that has to be reported and administered as any other invention, discovery, improvement or innovation.

Newly implemented NASA's Policy Directive 2210, External Release of NASA Software, establishes uniform procedures and responsibilities concerning domestic and foreign release of software.

Before software developed at Marshall can be released externally, Marshall's Technology Transfer Department must ensure it conforms to NASA policy directives.

"There are two ways that software can be released," said Larry Gagliano, who serves as the software release authority in the Tech Transfer Department. "When we receive an outside request for a particular piece of software, an Export Control evaluation is done to determine possible restrictions. A Software Usage Agreement is then signed and the software is given to the requestor."

This type of release is typically associated with older software or software that has been deemed "non-patentable." In this case a requestor has usually learned of the software through professional contacts or read about it in periodicals.

"Or a release may be related to newer software developed for a NASA program," Gagliano said. Once the software is complete or the project or contract closed out, a New Technology Report is filed disclosing the new technology. A commercialization and intellectual property assessment determines if the software can be patented. If so, a patent application is filed and Tech Transfer seeks interested parties to license the patent.

It is important to manage Marshall's software technologies as carefully as any other invention or innovation, Gagliano said.

To emphasize this importance, awards are given by NASA to software innovators, such as the "Software of the Year" award, monetary awards for being published in NASA Tech Briefs, or for successfully filing a patent application.

To learn more about the software patent and release process, call Gagliano at 544-7175 or visit Technology Transfer's Web site at: www.nasasolutions.com

Joining Chandra Observatory in space

Japanese-U.S. satellite ushers in golden era of X-ray astronomy

Astro-E, the Japanese-U.S. X-ray spacecraft poised for a Feb. 8 launch, will showcase an entirely new technology in X-ray detection that not only will serve as a test bed for future missions but also will earn the distinction of being the coldest known object in space.

With its official name to be bestowed after deployment, Astro-E will join the recently launched European X-ray Multi-Mirror Mission and the Marshall-managed Chandra X-ray Observatory, ushering in what many experts are calling the decade of X-ray astronomy.

"This new mission allows us to apply a piece of whiz-bang new technology to the exploration of the Universe," said Dr. Alan N. Bunner, science director of NASA's Structure and Evolution of the Universe program.

The new instrument is the X-ray Spectrometer (XRS), developed jointly by Goddard Space Flight Center in Greenbelt, Md., and Japan's Institute of Space and Astronautical Science. The spectrometer measures the heat created by individual X-ray photons, as opposed to converting X-rays to electrical charges and then collecting that charge, which is the mechanism in other X-ray detectors.

Using this new technique, it is possible to measure the energies of individual X-rays with a precision approximately 10 times greater than with previous X-ray sensors. To sense the heat of a single photon, however, the XRS detector must be cooled to an extremely low temperature, only 0.060 degrees Kelvin, or about — 460 degrees Fahrenheit.

This essentially makes the XRS detector the coldest object in space. The absence of all heat, called absolute zero, is 0.0 degree Kelvin; the coldest reaches of space are a balmy three degrees Kelvin.

"This increased precision for measuring X-rays should allow fundamental breakthroughs in our understanding of essentially all types of X-ray emitting sources, especially material very close to black holes and the X-ray emitting gas in the vast spaces between the individual galaxies that make up clusters of galaxies," said Dr. Richard Kelley, XRS Principal Investigator at Goddard.

Astro-E's targets include: clusters of galaxies; supermassive black holes; neutron stars; supernova remnants; stellar coronae of stars 10,000-times more active than our Sun; and a study of the history of how chemicals are made throughout the Universe.

Astro-E is primarily a spectroscopy mission, which means the satellite's instruments will study the "colors" of X-ray light, much like a prism breaks visible light into the colors of the rainbow. While the recently launched Chandra X-ray Observatory excels in producing X-ray images, Astro-E excels in producing spectra. In this regard, Astro-E complements Chandra, analyzing the light that Chandra sees and determining the temperature, velocity and composition of the gas producing those X-rays.

More information on the Astro-E mission can be found on the Internet at:
http://universe.gsfc.nasa.gov/press/astroe/
and http://heasarc.gsfc.nasa.gov/docs/astroe_1c/

NASA student 'Web chats' highlight Black History Month

Students from across the nation will be able to "chat" via the Internet during Black History Month with nine NASA African-American professionals, who will describe their roles in and their contributions to the space program.

The chat sessions will begin at 3 p.m. CST on Thursday, and are scheduled throughout February on NASA's Quest Web site: http://quest.nasa.gov

"When I was a kid in the southeast Bronx, also known as Fort Apache, I didn't know that the kind of job I now have existed, and I didn't know that there was any possibility I could do that job," said Dr. Patricia Cowings, a research psychologist at NASA's Ames Research Center in Silicon Valley, Calif.

Her chat session will begin at 1 p.m. CST on Feb. 9. "I'm going to give kids the message that they can do those jobs, and that it's important to follow your dreams," Cowings said.

"NASA Quest's annual series of Black History Month chats offers K-12 students and the public an opportunity to interact with African-American men and women who support NASA's mission and goals," said Oran Cox, who organized the chat series at Ames. "We believe this exchange is significant in providing role models for young people and will help in reaching populations historically underrepresented in science, engineering and technology fields."

Scheduled NASA participants include two aerospace engineers, an electronics engineer, biomedical engineer, nutritionist, computer scientist, psychologist, chemist and physicist. Cox expects more chat sessions will be added this month. First-come, first-served pre-registration via the Internet is required for students to participate in the sessions. Others can observe the conversations without registering.

Julie Williams-Bryd, an aerospace engineer from Langley Research Center in Hampton, Va, will take part in a two-day forum that will begin at 10 a.m. CST Feb. 8. She designs and builds custom-made lasers to investigate the makeup of the atmosphere.

An Internet forum is a chat room that remains open 24 hours a day to receive queries, but responses to the typed questions may not be "live." Other chats are scheduled as follows:

Feb. 3, 3 p.m. CST: Chat with Laurie Marshall, aerospace engineer at Dryden Flight Research Center, Edwards, Calif.

Feb. 8, 9-10 a.m. CST: Chat with Kim Hubbard, computer scientist at Ames Research Center, Silicon Valley, Calif.

Feb. 16, 1 p.m. CST: Chat with Dionne Jackson, analytical chemist at Kennedy Space Center, Fla.

Feb. 17, Noon CST: Chat with Janis Davis-Street, nutritionist at Johnson Space Center, Houston

Feb. 23, 1 p.m. CST: Chat with Dr. Daniel Winterhalter, space plasma physicist at the Jet Propulsion Laboratory, Pasadena, Calif.

Feb. 24, 11 a.m. CST: Chat with Dr. Aprille Ericsson-Jackson, aerospace engineer at Goddard Space Flight Center, Greenbelt, Md.

Feb. 24, Noon CST: Chat with Jennifer Murray, biomedical engineer at Kennedy Space Center, Fla.

Job Opportunities

CPP 00-12-CL, Aerospace Engineering Technician, GS-802-12, Space Transportation Directorate, Technology Evaluation Department, Mechanical Design Group. Closes Feb. 8.

CPP 00-15-CP, Administrative Assistant, GS-341-7, Science Directorate, Business Management and Administrative Office. Closes Feb. 8.

CPP 00-034-KP, AST, Flight Systems Design, GS-861-11, AST, Flight Systems Design, GS-861-11, Engineering Directorate, Structures, Mechanics & Thermal Department. Closes Feb. 8.

Recruiting Bulletin: MSFC-CD-00-03, Personnel Management Specialist, GS-201-12. Closes Feb. 7.

Recruiting Bulletin: MSFC-MP-00-05, Tech Management, GS-801-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-QS-00-06, Flight Systems Safety, GS-861-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-QS-00-07, Reliability and Quality Assurance, GS-861-12/13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-MP-00-08, Aerospace Flight Systems, GS-861-14, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-MP-00-09, Structural Materials, GS-806-14, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-FD-00-10, Mission Operations Integration, GS-801-13/14, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-PS-00-11, Contract Specialist, GS-1102-12. Closes Feb. 7.

Recruiting Bulletin: MSFC-PS-00-12, Contract Specialist, GS-1102-11. Closes Feb. 7.

Recruiting Bulletin: MSFC-AD-00-13, Deputy Security Officer, GS-080-14. Closes Feb. 7.

Recruiting Bulletin: MSFC-ED-00-15, Electronic Instrumentation Systems, GS-855-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-ED-00-16, Structural Dynamics, GS-861-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-ED-00-17, Flight Structures, GS-861-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-ED-00-18, Aerospace Metallic Materials, GS-806-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-MP-00-19, Liquid Propulsion Systems, GS-861-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-QS-00-20, Reliability and Quality Assurance, GS-861-13, AST. Closes Feb. 7

Recruiting Bulletin: MSFC-ED-00-21, Structural Materials, GS-806-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-ED-00-22, Flight Vehicle Atmospheric Environment, GS-861-13, AST. Closes Feb. 7.

Recruiting Bulletin: MSFC-ED-00-24, Structural Materials, GS-861-13, AST. Closes Feb. 7.

Employee Ads

Miscellaneous

★ Photography darkroom accessories, trays (3), easels (2), developing tanks (2), $5. 534-2025
★ Amana 20 cu. ft. refrigerator, top freezer, almond, $225 obo. 895-9050
★ Older PC computer w/14" monitor, CD, extra hard drives & other peripherals, will sell parts, $150 obo. 828-6213
★ Model airplane remote control radio, Futaba 8UAFS, extra receiver, never installed, $325. 233-5247
★ Sheltie/Blue Heeler mix female, 2 years old, smart and quick, $25. 772-1974
★ Satellite system, C-band, complete, $150. 881-4566
★ Knex toys, three boxes, ($200 worth), $65; Fisher Price dollhouse, $35. 722-9989/Price
★ This End Up cubbies, two, $65 each; bookcase, $95. 534-7981
★ GRE prep books, several titles, no marks, 1/2 original price. 539-0123
★ Labrador puppies, AKC/OFA, champion lines, sire show dog-junior hunter; blacks, chocolates, satin, $400. 880-8174
★ Boat motor, 5HP, Tohatsu w/motor dolly, $400. 881-4340
★ Firestone Firehawk GTA used tires, 4x P195/60R15 87H, 3x F570 205/70R14 95Tm $19 each. 230-2521
★ Aluminum window, 53 -1/2 x 30, $20; 24" x 80", Luan L. H. mobile home door, $30; Black & Decker 3/8" drill, $15. 461-8369
★ 55-gallon solid wood aquarium stand with double doors, $40. 721-7377
★ Sea World tickets, unused due to hurricane Floyd, discounted price. 858-0700
★ Fish/Depth finder, Hummingbird LCR400, $55. 379-3606
★ Baby stroller, blue with pink/green, $75; play pen, $10. 728-5890
★ Oak and hickory firewood for sale. Will deliver. (931) 433-6642
★ Maytag washer, almond, $100. 881-2069

Vehicles

★ 1973 Riviera, 2-door, midnight blue, white vinyl top, boat-back, some restoration done, best offer. 882-1892
★ 1988 Cadillac Cimmaron, leather, power seats, windows and locks, burgundy, $1,500 obo. 582-5210
★ 1995 Saturn SL2, 85K miles, teal green, all leather, all power, automatic 4-speed, loaded, 35mpg, $7,900. 464-9664
★ 1993 Nissan 300ZX 2 2, 44K miles, 5-speed, am/fm cassette, Bose stereo CD, all power, leather, $14,000. 883-6496
★ 1997 Mitsubishi Eclipse GS, loaded, alloy wheels, leather seats, moon roof, 6-CD changer, 51K miles, $13,500. 990-2050
★ 1996 Dodge Intrepid ES, V-6, 3.5 liter, 83K miles, metallic red, CD, keyless entry, alarm system, $9,600. 650-2179
★ 1996 Ford Explorer XLT, leather, moon roof, CD, anti-theft, running boards, luggage rack, $13,500. 828-7382
★ 1978 Chevy Bonanza LWB pickup w/toolbox, V-8, 134K miles, $1,700. 536-8692
★ 1996 Mazda 626 LX V-6, 59K miles, white, spoiler, moon roof, $10,200 o.b.o. 574-5098 after 5:30 p.m.
★ 1992 Acura Integra, red, 2-door hatchback, 5-speed, fully equipped, $5,900. 764-2492

Free

★ Small satellite antenna, approximately 30", no electronics. 233-5247
★ Two kittens, one black, one black and white. 828-4502 after 5 p.m.

Wanted

★ Foosball table in good condition. 830-9546
★ Britax Handle with Care infant car seat/carrier. 851-9519
★ "Hooked on Phonics" learning material. 881-0551
★ Set of computer speakers for a Gateway computer. 883-2757

Lost

★ Keyless remote entry in area of Bldg. 4201 credit union. Call 544-4995 or 883-0057 if found.

Found

★ Fold pin, visitor's parking lot, Bldg. 4200. Call 544-4758 to identify
★ Key, Bldg. 4200 area. Call 544-4758 to identify
★ Scarf, north end, Bldg. 4200. Call 544-4758 to identify
★ CDs, Roadway. Call 544-4758 to identify
★ Wedding band, Bldg. 4203, 3rd floor. Call 544-4758 to identify
★ Sunglasses, Bldg. 4200, ground floor. Call 544-4758 to identify
★ Lunch bag w/water bottle, south side, Bldg. 4200. Call 544-4758 to identify

Center Announcements

☞ ***Breast Cancer Stamp*** **—** The U.S. Postal Service recently released its new "Fund the Cure" stamp to help fund breast cancer research. The stamp, designed by Ethel Kessler of Bethesda, Md., sells for 40 cents. The additional 7 cents will go to breast cancer research. If all stamps are sold, it will raise $16 million for this vital research.

☞ ***Earth Day Logo Contest*** **—** Employees and on-site contractors are invited to submit designs in the "Reuse It or Lose It" Earth-Day T-shirt logo contest. The submission must be a picture on 8.5" by 11" white paper and must have no more than four colors. Employees may enter as many designs as they like. The contest winner receives $50. Send all entries with name and phone number on the back of the design to Reginald Alexander, TD31, or Cedreck Davis, AD21, by Feb. 18.

☞ ***CPR/First Aid Training Offered*** **—** Due to recent increased interest, three sessions of the CPR/First Aid training conducted by the American Red Cross have been scheduled. The classes (and all course information) have been entered into AdminSTAR. Civil service employees should register via AdminSTAR.

☞ ***Facilities Office Breakfast*** **—** The Facilities Office employees, retirees and friends will meet for breakfast at 8 a.m. Feb. 8 at the Shoney's on University Drive and Memorial Parkway. For more information, call Carl Gates at 232-2695.

☞ ***MARS Valentine Dinner Dance*** **—** A semi-formal Valentine dance will be held at 6:30 p.m. Feb. 12 at the Von Braun Center West Exhibit Hall. The event features ballroom music, socializing, buffet dinner and dancing. Tickets, at $19 per person with a $3 discount for members, can be purchased from Tamara Landers at 544-6818, Pat Sage at 544-5427, Ed Ogozalek at 837-1486, Linda Kinney at 544-0563, Bob Williams at 544-3998, and Hugo Berry at 544-3525.

☞ ***MARS Ballroom Dance Club*** **—** Waltz and cha-cha lessons are being offered Feb. 7, 14, 21, and 28 in the Parish Hall of St. Stephen's Episcopal Church at 8020 Whitesburg Dr. Intermediate classes will start at 7 and beginner classes at 8. The lessons cost $6 per person per night. For more information, call Linda Kinney at 544-0563.

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